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evaluating an information flow received from the system;
predicting an abnormality when the information flow differs significantly from normal state
information as determined by the neural network; and
implementing a procedure, if an abnormality is predicted, to prevent or treat the
abnormality.

REMARKS

In the Office Action mailed on June 12, 2002, claims 1-3, 10, and 16-18 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ravdin et al. (U.S. Patent No. 5,862,304) ("Ravdin"); and claims 4-9 and 11-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ravdin in view of Abrams et al. (U.S. Patent No. 6,117,066) ("Abrams"). The foregoing rejections are respectfully traversed.

Claims 1-18 are pending in the subject application, of which claims 1 and 16-18 are independent. Claim 18 is amended. Care has been exercised to avoid the introduction of new matter. A Version With Markings To Show Changes Made to the specification and amended claims is included herewith.

Entry of Amendment After Final Rejection:

The Applicant respectfully asserts that the amendments presented herein require only a cursory review by the Examiner, and respectfully requests that the Examiner enter such amendments.

Claim Rejections:

Cited References:

Ravdin discusses a method for the prediction of an illness or of a given medical state by the use of a neural network. In the prognosis method, a neural network is trained with (training) prognosis data, such prognosis data involving the illness or medical state to be prognosed. After the training, whether the (test) prognosis data likewise involves the illness or the given medical state is tested by the use of the trained neural network (Ravdin, col. 2, lines 43-50).

Thus, Ravdin discusses a classic method using a neural network to classify data with regard to unknown states (Ravdin, col. 1, lines 12-24). Specifically, Ravdin uses a back-propagation neural network and training method to predict future disease occurrence using sets of prognostic variables for which disease occurrence is not known (Ravdin, col. 2, lines 51-58). Ravdin is useful only in bringing a known neural technique to a specific medical problem (Ravdin, col. 2, lines 36-40).

Abrams discusses treatment of given neurological and psychiatric illnesses by the use of electrodes for the production of pulsing magnetic fields with variable intensities.

Claimed Invention:

In contrast, claims 1 and 16-18 of the subject application (as amended herein) recite "an information flow." The cited references, taken alone or in combination, do not disclose or suggest the same.

Differences Between Claimed Invention and Cited References:

The present invention is based on a completely different and novel approach to prognoses. The present invention involves the determination of an abnormality of a system by the use of a heretofore unknown information flow of the system. The concept of an information flow is new, and it describes a development of a predictability of plural future systems. "Information flow" is described in the specification as characterizing a loss of information in a dynamic system and is used to classify dynamic behavior of a complex system (Substitute Specification, ¶ 3). The determination of the information flow can take place directly from data, but also with the interposition of a neural network, which is trained with the data, the application of which determines the information flow. Thus, the use of a neural network is optional in the present invention. Ravdin requires the use of a neural network. In fact, Ravdin does not disclose or suggest the information flow of the present invention. The information flow of the present invention makes possible a highly reliable recognition of an abnormal physiological state, because the information flow is independent of the normal changes in the dynamics of a physiological signal. Further, Abrams does not disclose or suggest the prediction of abnormal states of a dynamic system or an information flow. Therefore, claims 1 and 16-18 of the subject application are patentably distinguishable over the cited references. Claims 2-15 are allowable

based on their dependency, directly or indirectly, from claim 1.

Lack of Motivation to Combine the Cited References:

In addition, MPEP § 2142 states that "[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper." The Examiner is required to present actual evidence and make particular findings related to the motivation to combine the teachings of the references. In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Dembiczak, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence." Dembiczak, 50 USPQ2d at 1617. "The factual inquiry whether to combine the references must be thorough and searching." In re Lee, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (citing McGinley v. Franklin Sports, Inc., 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)). The factual inquiry must be based on objective evidence of record, and cannot be based on subjective belief and unknown authority. Id. at 1433-34. The Examiner must explain the reasons that one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. In re Rouffet, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

The Examiner has not presented any evidence why Ravdin and Abrams would have been combined. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01. Specifically, there must be a suggestion or motivation in the references to make the combination or modification. Id. The Examiner's sole support for such a combination is that such a combination would provide means to treat neurological and psychiatric disorders so that damaging and potentially fatal conditions associated with neurological and psychiatric disorders can be identified and treated before they occur. The Examiner cannot rely on the benefit of the combination without first supporting the motivation to make the combination. Such motivation does not appear anywhere in either reference, and the Examiner has not presented any actual evidence in support of the same. Instead, the Examiner relies on broad conclusory statements, subjective belief, and unknown authority. Such a basis does not adequately support the combination of references; therefore, the combination is improper and must be withdrawn.


Withdrawal of the foregoing rejections is respectfully requested.

There being no further objections or rejections, it is submitted that the application is in condition for allowance, which action is courteously requested. Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters. If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 10-15-2002

By: 
Matthew Q. Ammon
Registration No. 50,346

700 Eleventh Street, NW, Suite 500
Washington, D.C. 20001
(202) 434-1500



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

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IN THE CLAIMS:

Please AMEND claim 18 as follows:

TECHNOLOGY CENTER R3700

18. (ONCE AMENDED) A method for predicting an abnormality of a dynamic system and for implementing a procedure in response to the abnormality, comprising:

training a neural network to learn the dynamics of a system;

evaluating an information flow received from the system;

predicting an abnormality when the information flow [received from the system] differs significantly from normal state information as determined by the neural network; and

implementing a procedure, if an abnormality is predicted, to prevent or treat the abnormality.